



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/870,029	05/30/2001	Charles F. Seagren	20206-118 (P99-2579)	6748

25696 7590 09/24/2004

OPPENHEIMER WOLFF & DONNELLY
P. O. BOX 10356
PALO ALTO, CA 94303

EXAMINER

MAURO JR, THOMAS J

ART UNIT PAPER NUMBER

2143

DATE MAILED: 09/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/870,029	Applicant(s) SEAGREN ET AL.	
	Examiner Thomas J. Mauro Jr.	Art Unit 2143	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 May 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 September 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>20020228</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-9 are pending and are presented for examination. A formal action on the merits of claims 1-9 follows.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1 and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Jacobs et al. (U.S. 6,236,999).

With respect to claim 1, Jacobs teaches a system for providing Java-implemented Application Servers to a plurality of clients, the system comprising:

a computing system having a plurality of processing elements, each element configured such that, despite a failure of one processing element, the remaining processing elements continue to function [Jacobs -- Figure 3C, Col. 7 lines 17-22, Col. 8 lines 8-22 and lines 35-40, Col. 9 lines 51-65, Col. 10 lines 62-67 – Col. 11 lines 1-5 and Col. 13 lines 49-60 – Clustered Enterprise JAVA system includes a multiple server (302 and 303) distributed processing system which tests for failed servers by sending a heartbeat message, which if no response

Art Unit: 2143

is received, removes the server from the handling provider list to avoid delays while other servers, i.e. processing elements, continue to serve clients];

a plurality of Java-implemented Application Servers, at least one server assigned to execute on one or more processing elements [Jacobs -- Figures 3A-3C, Col. 1 lines 50-61, Col. 7 lines 29-40 and lines 51-66, Col. 8 lines 41-67 and Col. 18 lines 55-67 – Col. 19 lines 1-2 – Clustered JAVA Enterprise architecture includes multiple distributed JAVA processing systems servers consisting of servers, i.e. Application Servers]; and

a distributor module that is configured to capture connection requests from a client on a port, to select one of the plurality of Application Servers to communicate with the requesting client during the connection and to assign the connection request to the selected one of the plurality of Application Servers, such that, after the assignment, the selected Application Server communicates directly with the client [Jacobs -- Figures 3B, 3C, 5A, 6A and 6D, Col. 10 lines 16-21 and Col. 12 lines 1-22 and lines 44-53 – Client makes connection request to distributed JAVA processing system which then implements load balancing, based upon the load on given servers in the cluster, and assigns client connection to server through which all communication and processing occurs].

With respect to claim 6, this is a method claim corresponding to the system claimed in claim 1 above. It has similar limitations; therefore, claim 6 is rejected under the same rationale.

Art Unit: 2143

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 2, 5, 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scott et al. (U.S. 6,560,717) in view of Jacobs et al. (U.S. 6,236,999).

Regarding claim 1, Scott teaches a system comprising:

a computing system having a plurality of processing elements, each element configured such that, despite a failure of one processing element, the remaining processing elements continue to function [Scott -- Figure 1, Col. 3 lines 3-14 and Col. 7 lines 23-34 -- **System contains multiple processing application servers, which in the event of one server going down, continue to operate by simply excluding the failed server**]; and

a distributor module that is configured to capture connection requests from a client on a port, to select one of the plurality of Application Servers to communicate with the requesting client during the connection and to assign the connection request to the selected one of the plurality of Application Servers, such that, after the assignment, the selected Application Server communicates directly with the client [Scott -- Col. 3 lines 43-67 -- Col. 4 lines 1-32 -- **Load balancer and load manager receive connection requests, obviously on an open port for**

Art Unit: 2143

receiving information from clients, and select one of the application servers to process the request, upon which communication occurs between the client and server].

Scott fails to explicitly teach a plurality of Java-implemented application servers assigned to execute on one or more processing elements.

Jacobs, however, discloses a clustered enterprise JAVA distributed processing system containing a plurality of Java-implemented Application Servers, at least one server assigned to execute on one or more processing elements [**Jacobs -- Figures 3A-3C, Col. 1 lines 50-61, Col. 7 lines 29-40 and lines 51-66, Col. 8 lines 41-67 and Col. 18 lines 55-67 – Col. 19 lines 1-2 – Clustered JAVA Enterprise architecture includes multiple distributed JAVA processing systems servers consisting of servers, i.e. Application Servers].**

Both Scott and Jacobs both disclose methods for load-balancing client requests over a plurality of servers and monitoring for failed servers.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate a plurality of Java-implemented application servers assigned to execute on one or more processing elements, as taught by Jacobs into the invention of Scott, in order to provide a more scalable system by implementation of JAVA servers [**Jacobs -- Col. 3 lines 56-60].**

Regarding claim 2, Scott-Jacobs teach the invention substantially as claimed, as aforementioned in claim 1 above, including a monitoring module that is configured to restart a server which has failed [**Scott -- Figures 1 and 6, Col. 2 lines 44-61 and Col. 7 lines 35-53 - A**

Art Unit: 2143

failed server is detected and a restart command is issued for that server after a failure counter reaches a failure number].

Regarding claim 5, Scott-Jacobs teach the invention substantially as claimed, as aforementioned in claim 1 above, including maintaining and updating an information structure indicating how many clients have a connection with each server, after receiving a response message to a polling request for server information [**Scott -- Figure 2, Col. 3 lines 3-14 and Col. 3 lines 43-67 – Col. 4 lines 1-12].**

Regarding claims 6, 7 and 9, these are method claims corresponding to the system claimed in claims 1, 2 and 5 above respectively. They have similar limitations; therefore, claims 6, 7 and 9 are rejected under the same rationale.

6. Claims 2, 5, 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobs et al. (U.S. 6,236,999), as applied to claims 1 and 6 above respectively, in view of Scott et al. (U.S. 6,560,717).

Regarding claim 2, Jacobs teaches the invention substantially as claimed, as aforementioned in claim 1 above, including monitoring for failed servers [**Jacobs -- Col. 9 lines 51-65]**, however, fails to explicitly teach restarting the distributor or other Application server which has failed.

Art Unit: 2143

Scott, however, discloses a multiple server load-balancing system which detects a failed server and issues a restart command for that server after a failure counter reaches a failure number [Scott -- Figures 1 and 6, Col. 2 lines 44-61 and Col. 7 lines 35-53].

Both Jacobs and Scott both disclose methods for load-balancing client requests over a plurality of servers and monitoring for failed servers.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the restarting of a servers after faults, as taught by Scott into the invention of Jacobs, in order to further manage server loads and provide for fault tolerance and recovery to bring servers back online which increases the distribution of the load on the network or cluster.

Regarding claim 5, Jacobs teaches the invention substantially as claimed, as aforementioned in claim 1 above, but fails to explicitly teach maintaining an information structure indicating how many clients have a connection with each server, receiving a message from a server that a connection has been closed and updating the number of client with a connection to a given server.

Scott, however, discloses a multiple server load-balancing system which includes a table for storing and updating connection/load information for the multiple servers including the number of connections open by each server after receiving a response message to a polling request for server information [Scott -- Figure 2, Col. 3 lines 3-14 and Col. 3 lines 43-67 – Col. 4 lines 1-12].

Art Unit: 2143

Both Jacobs and Scott both disclose methods for load-balancing client requests over a plurality of servers and monitoring for failed servers.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the maintaining an information structure indicating how many clients have a connection with each server, receiving a message from a server that a connection has been closed and updating the number of client with a connection to a given server, as taught by Scott into the invention of Jacobs, in order to provide a system which bases load balancing on actual measurements of the load on a server [**Scott -- Col. 1 lines 39-41**] to more accurately and evenly balance and distribute loads as conditions change continually.

With respect to claims 7 and 9, these are method claims corresponding to the system claimed in claims 2 and 5 above respectively. They have similar limitations; therefore, claims 7 and 9 are rejected under the same rationale.

7. Claims 3 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobs et al. (U.S. 6,236,999), as applied to claims 1 and 6 above respectively, in view of Chou et al. (U.S. 6,247,056).

Regarding claim 3, Jacobs teaches the invention substantially as claimed, as aforementioned in claim 1 above, wherein the distributor module is configured to select one of

Art Unit: 2143

the servers by determining whether there is an application server supporting fewer connections than the other application servers [**Jacobs -- Col. 11 lines 44-59 and Col. 12 lines 1-22 and lines 44-53 – Load balancing module determines appropriate server to route request to by determining the load, i.e. number of connections or clients being serviced, on a particular server and routing the request to a server with less of a load**].

Jacobs fails to explicitly teach sending to the server a message that identifies the client making the request, placing the client connection request on a waiting list, i.e. queue, until a server is available and sending the server a message that identifies the client making the connection request when a server becomes available.

Chou, however, discloses a system for handling client requests in a distributed server environment which upon location of a server to distribute a request to, repackaging information received in the browser request and sending that request with a transaction ID to the allocated application server [**Chou -- Col. 8 lines 1-30 – Message to client, i.e. repackaged request, obviously contains information to identify client, including transaction ID and source IP address from original request packet**]. In addition, if no servers are available, Chou discloses that the dispatcher will place the request in a queue until a server becomes available, at which time, request is removed from the queue and like above, is repackaged and sent to server with transaction ID [**Chou -- Col. 8 lines 1-30 and Col. 13 lines 26-43**].

Both Jacobs and Chou disclose methods for distributing client requests across a plurality of processing servers.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the sending of a message identifying the client request and

Art Unit: 2143

queuing requests when no server is available, as taught by Chou into the invention of Jacobs, in order to provide a form of identification with which the browser request is associated [**Chou -- Col. 8 lines 27-30**] and to provide an increased service quality by not dropping requests when servers are busy but holding them for future deployment to servers.

With respect to claim 8, this is a method claim corresponding to the system claimed in claim 3 above. It has similar limitations; therefore, claim 8 is rejected under the same rationale.

8. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobs et al. (U.S. 6,236,999) and Chou et al. (U.S. 6,247,056), as applied to claim 3 above, in view of Carlson (U.S. 6,697,849).

Regarding claim 4, Jacobs-Chou teach the invention substantially as claimed, as aforementioned in claim 3 above, including determining a server supporting fewer connections than other servers [**Jacobs -- Col. 11 lines 44-59 and Col. 12 lines 44-53 – Server selection is based upon server load, therefore, server loads are computed and least loaded server would be selected**] and in addition, executing a round robin procedure to determine a server to process a client request [**Jacobs -- Col. 12 lines 1-34**].

Jacobs, however, fails to teach wherein the round robin procedure is weighted.

Art Unit: 2143

Carlson, however, discloses a system for caching JAVA server pages response which load balances client requests across a plurality of application servers using a weighted round-robin algorithm to evenly distribute requests [**Carlson -- Col. 12 lines 6-26**].

Both Jacobs-Chou and Carlson disclose methods for load balancing requests across a plurality of servers.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the use of a weighted round-robin algorithm, as taught by Carlson into the invention of Jacobs-Chou, in order to provide more even distribution of client requests, which based upon a server's resources, are proportionally distributed based upon their resource weights [**Carlson -- Col. 12 lines 18-26**].

9. Claims 3 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scott et al. (U.S. 6,560,717) and Jacobs et al. (U.S. 6,236,999), as applied to claims 1 and 6 above respectively, in view of Chou et al. (U.S. 6,247,056).

Regarding claim 3, Scott-Jacobs teach the invention substantially as claimed, as aforementioned in claim 1 above, wherein the distributor module is configured to select one of the servers by using connection information stored in a table to select a server with fewer connections than highly loaded servers [**Scott -- Col. 3 lines 32-67 – Col. 4 lines 1-32**].

Scott-Jacobs fail to explicitly teach sending to the server a message that identifies the client making the request, placing the client connection request on a waiting list, i.e. queue, until a

Art Unit: 2143

server is available and sending the server a message that identifies the client making the connection request when a server becomes available.

Chou, however, discloses a system for handling client requests in a distributed server environment which upon location of a server to distribute a request to, repackaging information received in the browser request and sending that request with a transaction ID to the allocated application server **[Chou -- Col. 8 lines 1-30 – Message to client, i.e. repackaged request, obviously contains information to identify client, including transaction ID and source IP address from original request packet]**. In addition, if no servers are available, Chou discloses that the dispatcher will place the request in a queue until a server becomes available, at which time, request is removed from the queue and like above, is repackaged and sent to server with transaction ID **[Chou -- Col. 8 lines 1-30 and Col. 13 lines 26-43]**.

Both Scott-Jacobs and Chou disclose methods for distributing client requests across a plurality of processing servers.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the sending of a message identifying the client request and queuing requests when no server is available, as taught by Chou into the invention of Scott-Jacobs, in order to provide a form of identification with which the browser request is associated **[Chou -- Col. 8 lines 27-30]** and to provide an increased service quality by not dropping requests when servers are busy but holding them for future deployment to servers.

With respect to claim 8, this is a method claim corresponding to the system claimed in claim 3 above. It has similar limitations; therefore, claim 8 is rejected under the same rationale.

10. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Scott et al. (U.S. 6,560,717), Jacobs et al. (U.S. 6,236,999) and Chou et al. (U.S. 6,247,056), as applied to claim 3 above, in view of Carlson (U.S. 6,697,849).

Regarding claim 4, Scott-Jacobs-Chou teach the invention substantially as claimed, as aforementioned in claim 3 above, including determining a server supporting fewer connections than other servers [**Scott -- Figure 2 and Col. 3 lines 43-67 -- Col. 4 lines 1-32 -- Connection information is stored in a table which indicates the number of connections currently active for each server**] and in addition, executing a round robin procedure to determine a server to process a client request [**Jacobs -- Col. 12 lines 1-34**].

Scott-Jacobs-Chou, however, fail to teach wherein the round robin procedure is weighted. Carlson, however, discloses a system for caching JAVA server pages response which load balances client requests across a plurality of application servers using a weighted round-robin algorithm to evenly distribute requests [**Carlson -- Col. 12 lines 6-26**].

Both Scott-Jacobs-Chou and Carlson disclose methods for load balancing requests across a plurality of servers.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the use of a weighted round-robin algorithm, as taught by Carlson into the invention of Scott-Jacobs-Chou, in order to provide more even distribution of

Art Unit: 2143

client requests, which based upon a server's resources, are proportionally distributed based upon their resource weights [Carlson -- Col. 12 lines 18-26].

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Choquier et al. (U.S. 5,774,668) discloses a system for routing client requests to appropriately servers using load information provided by a service map dispatcher.
- Bruck et al. (U.S. 6,691,165) discloses a scalable and distributed load balancing server system with fault tolerance for failed servers.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas J. Mauro Jr. whose telephone number is 703-605-1234.

The examiner can normally be reached on M-F 8:00a.m. - 4:30p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David A. Wiley can be reached on 703-308-5221. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.


Art Unit: 2143

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



TJM

September 14, 2004


JACK B. HARVEY
SUPERVISORY PATENT EXAMINER